Hotwire® TDM SHDSL Endpoints

Models 7995-A2-411, 7995-A2-421, 7995-A2-422, 7995-A2-700, 7996-A2-410, 7996-A2-420, and 7996-A2-700

Installation Instructions

Document Number 7990-A2-ZN10-30

December 2005

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Product Documentation Online

Complete documentation for this product is available at **www.zhone.com**.

Select the following document:

Hotwire TDM SHDSL Endpoints, Models 7995-A2-411, 7995-A2-421, 7995-A2-422, 7995-A2-700, 7996-A2-410, 7996-A2-420 and 7996-A2-700, User's Guide

Package Checklist

Verify that your package contains:

- Hotwire® TDM SHDSL Endpoint
- 24 VDC power transformer with separate power cable
  – or –
  6-conductor direct connection DC power cable
- 8-position modular-to-8-position modular network cable
- DB9-to-8-position modular terminal cable

For Model 7995, your package should also contain a:

- V.35 cable adapter

Notify your sales representative if anything is missing or damaged.

Installation Overview

Installation and configuration of the Hotwire 799x endpoint consists of:

- Connecting power to the unit.
- Connecting to the network.
- Connecting to a DTE.
- Connecting a system terminal.
- Providing initial unit identity information or changing existing identity information.
- Configuring your unit using the Configuration Edit menus.

Before you install the unit, read the *Important Safety Instructions* on page 29.

See the *Hotwire TDM SHDSL Endpoints, Models 7995-A2-411, 7995-A2-421, 7995-A2-422, 7995-A2-700, 7996-A2-410, 7996-A2-420 and 7996-A2-700, User's Guide* for additional information about:

- Configuration Options
- Messages and Troubleshooting
- Technical Specifications
- Connectors, Cables, and Pin Assignments

Connecting Power to the Unit

If your package includes a power transformer:

1. Plug the power cable into an AC outlet having a nominal voltage rating between 100–240 VAC.
2. Connect the power cable to the transformer.
3. Connect the output cable of the transformer to the connector marked POWER on the rear panel.

If your package includes a direct-connection DC power cable:

Connect the unit to an external +24 or –48 VDC SELV (Safety Extra Low Voltage) power source as described in the following section.

Connecting the Unit to an Optional External +24 or –48 VDC Power Source

Using the DC power cable, the unit is capable of operating on a +24 VDC or –48 VDC SELV power supply.

To use the DC power cable for +24 VDC:

▶ Procedure

1. Connect the green wire to a suitable ground.
2. Connect the orange wire to the +24 VDC source.
3. Connect the white wire to the return.
4. Cut the black, red, and blue wires off at the outer insulation.
5. Plug the power connector into the unit.

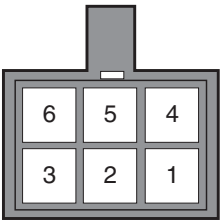
To use the DC power cable for –48 VDC:

▶ Procedure

1. Connect the green wire to a suitable ground.
2. Connect the orange wire to the –48 VDC source.
3. Connect the black wire to the return.
4. Cut the red, white, and blue wires off at the outer insulation.
5. Plug the power connector into the unit.

Power Cable Pinouts

Pin Number	Wire Color	Signal
1	Black	–48 VDC Return
2	Red	–48 VDC Return
3	Green	Ground
4	White	+24 VDC Return
5	Orange	+24 VDC/–48 VDC
6	Blue	No Connection



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Connecting to the Network

▶ Procedure

To connect your unit to the network:

1. Connect one end of the supplied 8-position modular-to-8-position modular network cable into the rear panel DSL jack.
2. Connect the other end to your DSL network interface.

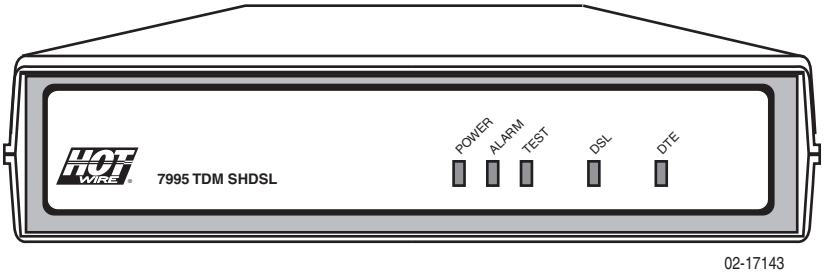
NOTE:
Do *not* use a flat VF network cable as this may severely degrade the performance of the unit. Use only Cat 5 twisted-pair network cable.

Connecting to a DTE

Model	DTE Connection
7995	The synchronous interface is a 25-pin EIA-530-A interface. Depending on the cable used, the interface can be adapted to an X.21, RS-449, or V.35 interface. A V.35 cable may be used with the supplied adapter.
7996	The G.703 interface is either two BNC connectors (Transmit and Receive) for a 75-ohm unbalanced interface or an 8-position, unkeyed modular connector for a 120-ohm balanced interface.

See *Connectors, Cables, and Pin Assignments* in the User's Guide for specifications of the connectors and cables.

LEDs



The following table contains a description of the LEDs on the Hotwire 799x endpoint's front panel.

Label	Color	LED is . . .*	Indicating . . .
POWER	Green	On Off Slow Cycling	Normal operation. No power to the unit. Unit is in minimum mode and a download is required.
ALARM	Red	On Off	Device failure, or self-test has failed. Self-test passed.
TEST	Yellow	On Off Slow Cycling	Loopback test in progress. No tests in progress. Self-test in progress.
DSL	Green	On Off Slow Cycling	DSL link is up. The DSL link is down. DSL training in progress.
DTE (7995) G.703 (7996)	Green	On Off Slow Cycling Fast Cycling	DTE port is operational. **DTE:** No signal on port or configured DTR or RTS are not active. **G.703:** No signal on port. **G.703:** Remote Alarm Indication received. **G.703:** OOF, LOF, EER, or AIS condition received.

* Slow Cycling: LED turns off and on in equal duration once per second.
Fast Cycling: LED turns off and on in equal duration 5 times per second.

Connecting to a System Terminal

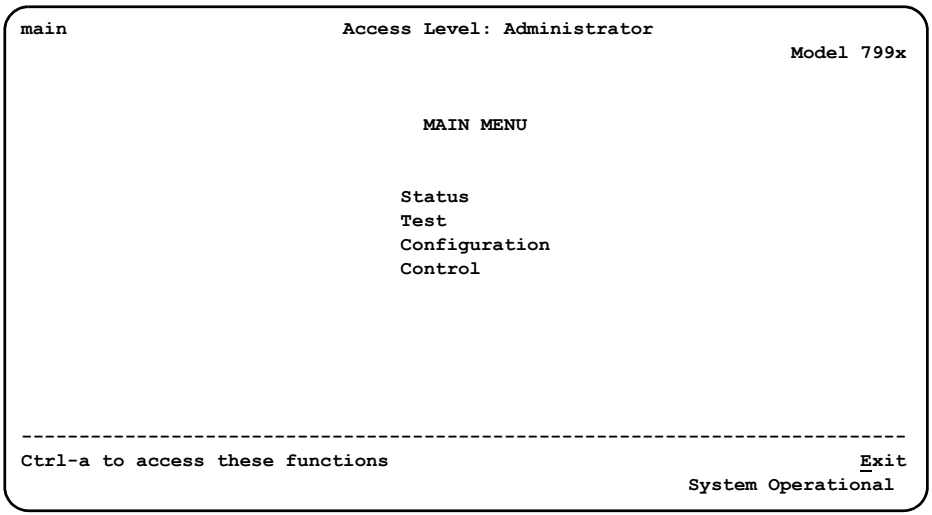
An optional system maintenance terminal may be attached to your Hotwire 799x endpoint through the modular jack on the rear panel. The system maintenance terminal allows you to view the status of the unit and change configuration options. The terminal must be a VT100-compatible terminal or a PC running terminal emulation software.

▶ Procedure

To connect your unit to a system terminal:

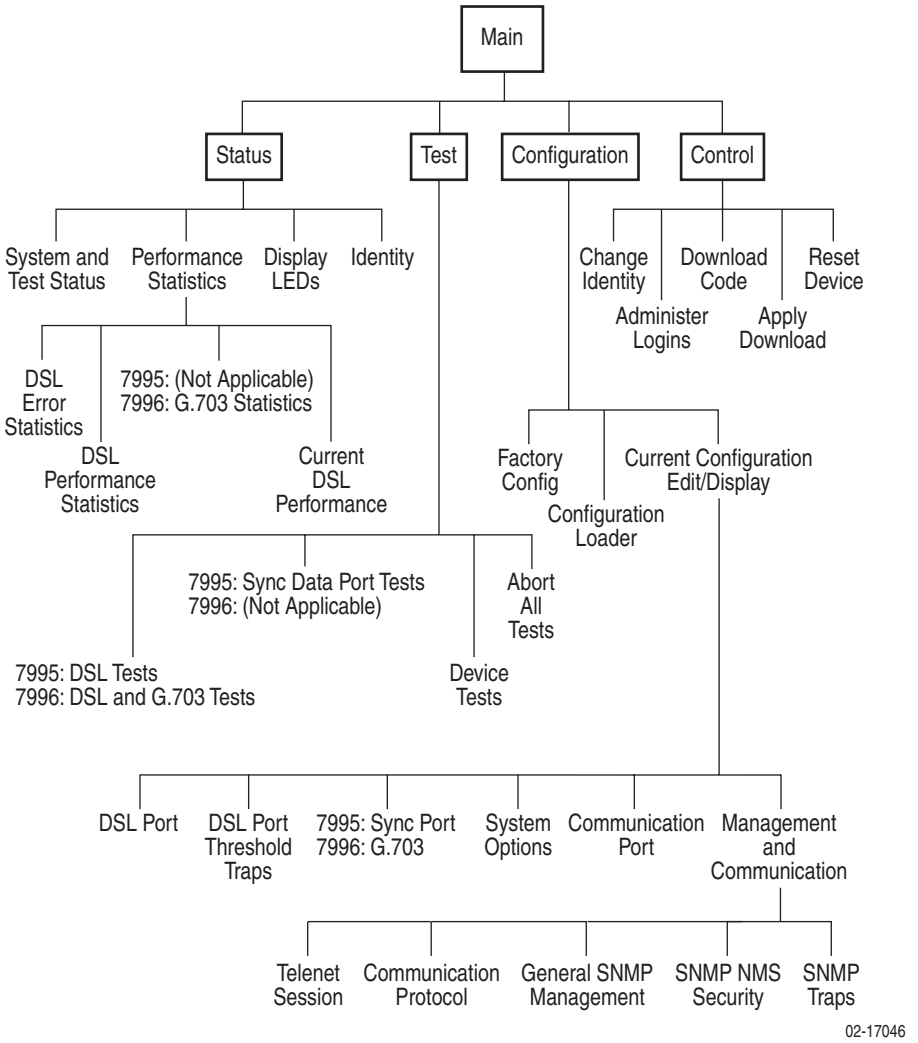
1. Connect the 9-pin end of the supplied terminal cable into a COM port on your PC.
2. Plug the other end into the modular jack on the rear panel.
3. Set the communication parameters on your PC or terminal to:
   - 9600 baud
   - 8 bit characters
   - no parity
   - 1 stop bit
   - no flow control
4. Press Enter from your terminal or PC to activate the Main Menu for the attached unit.

   The system runs diagnostics and status checks. After a few moments, the Main Menu or Logon screen appears on your terminal.



Asynchronous Terminal Interface Menu

The following illustration shows the menu paths to the different terminal screens.



Entering Identity Information

After accessing your unit for the first time, use the Change Identity screen to determine SNMP administrative system information that will be displayed on the Identity screen of the Status branch. To access the Identity screen, follow this menu selection sequence:

Main Menu → *Control* → *Change Identity*

Selecting a Configuration Method

You can make configuration changes either through a VT100-compatible terminal and the unit's Configuration menus or by manually changing switches on the board. The unit is shipped with the switchpacks disabled to allow settings to be made through the Configuration menus. See the User's Guide for detailed information about the configuration options and switch settings.

Configuring the Unit Using the Configuration Menus

Use the Configuration menu to select, display, or change configuration option settings.

NOTE:

The Hotwire 799x endpoint is shipped configured as an STU-R. If you use this unit as an STU-R, the configuration options may not need to be altered.

The unit has two sets of configuration option settings:

- **The Current Configuration:** The unit's active set of configuration options.
- **The Default Factory Configuration:** A read-only configuration area containing the factory default configuration options.

Displaying Configuration Options

To display configuration options, you must first load a configuration into the edit area. To load a configuration option set into the configuration edit area, follow this menu selection sequence:

Main Menu → *Configuration (Load Configuration From)*

Make a selection by placing the cursor at your choice and pressing Enter.

If you select . . .	Then . . .
Current Configuration	The selected configuration option set is loaded and the Configuration Edit/Display menu screen appears.
Configuration Loader	The Configuration Loader screen is displayed allowing you to upload or download configurations from a TFTP server.
Default Factory Configuration	The selected configuration option set is loaded and the Configuration Edit/Display menu screen appears.

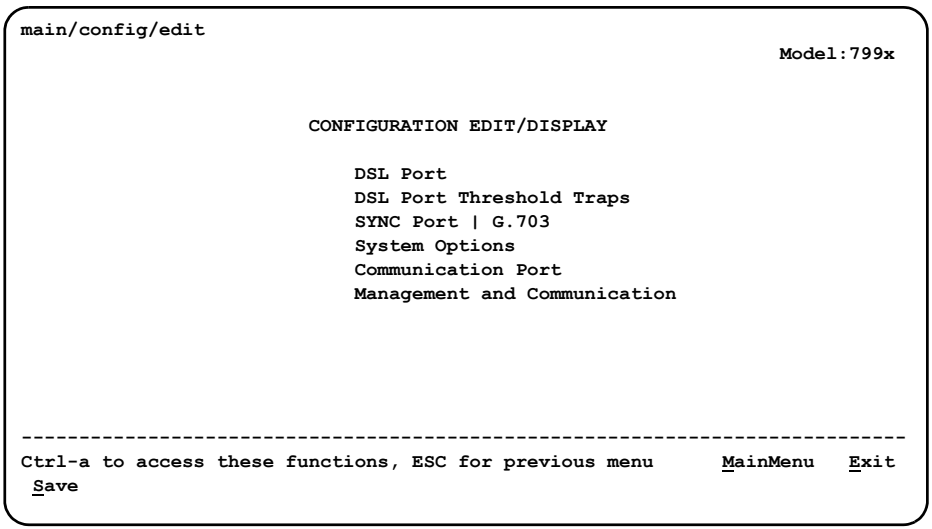
Configuration Edit/Display

The Configuration Edit/Display screen is displayed when the current or default configuration is loaded. To access the Configuration Edit/Display screen, follow this menu selection sequence:

Main Menu → *Configuration* → *Current Configuration*

– or –

Main Menu → *Configuration* → *Default Factory Configuration*



Select . . .	To Access the . . .	To Configure the . . .
DSL Port	DSL Interface Options (Table 1)	DSL ports on the unit.
DSL Port Threshold Traps	DSL Port Threshold Trap Options (Table 2)	Threshold for DSL traps (for the STU-C only).
SYNC Port G.703	Synchronous Data Port Options – Model 7995 (Table 3) G.703 Interface Options – Model 7996 (Table 4)	Synchronous DTE interface (Model 7995) G.703 interface (Model 7996)
System Options	System Options (Table 5)	General system options of the unit.
Communication Port	Communication Port Options (Table 6)	Unit's COM port options.
Management and Communication	• Telnet Session Options (Table 7) • Communication Protocol Options (Table 8) • General SNMP Management Options (Table 9) • SNMP NMS Security Options (Table 10) • SNMP Traps Options (Table 11)	Management support of the unit through SNMP and Telnet (Telnet is for the STU-C only).

For complete details about the configuration options, see the *Hotwire TDM SHDSL Endpoints, Models 7995-A2-411, 7995-A2-421, 7995-A2-422, 7995-A2-700, 7996-A2-410, 7996-A2-420 and 7996-A2-700, User's Guide*.

Table 1: DSL Interface Options (1 of 2)

Estimated Line Length
Possible Settings: **Short, Medium, Long** Default Setting: **Short**
The estimated line length is the estimated distance from the local exchange to determine the speeds that can be supported.

Table 1: DSL Interface Options (2 of 2)

Start Up Margin
Possible Settings: **0dB – 15dB** Default Setting: **4dB**
Specifies the Signal to Noise Ratio (SNR) margin a port must exceed to successfully train up with the remote unit.
Max DSL Rate
Possible settings depend on whether Spectrum Management is enabled. Determines the maximum speed of the DSL line when in Adaptive Rate mode (Max DSL Rate does not equal Min DSL Rate).
Min DSL Rate
Possible settings depend on whether Spectrum Management is enabled. Determines the minimum speed of the DSL line when in Adaptive Rate mode (Max DSL Rate does not equal Min DSL Rate).
EIA-530 Payload Rate (for Model 7996 only)
Possible Settings: **64, 128** Default Setting: [Highest multiple of 64 kbps supported by the DSL Line Rate]
When the remote STU-R has an EIA-530-A interface, the Payload Rate set on the STU-C determines the port speed of the synchronous port of the STU-R. Only 64 and 128 kbps are selectable, otherwise this field is read-only.
Remotely Initiated Loopback
Possible Settings: **Enable, Disable** Default Setting: **Enable**
Specifies whether the endpoint will respond to a loopback command from the access card.
Peer IP Address
Possible Settings: **001.000.000.000 – 223.255.255.255, Clear** Default Setting: **000.000.000.000**
Specifies the peer IP address for the remote management link on the DSL loop.
Circuit Identifier
Possible Settings: ***ASCII text field*****, Clear** Default Setting: [blank]
Uniquely identifies the circuit number of the transmission vendor's DSL line for troubleshooting purposes.

Table 2: DSL Port Threshold Trap Options

ES Trap Threshold
Possible Settings: **1–900, or 0 to Disable** Default Setting: **120**
Specifies the threshold for Error Seconds events in a 15-minute interval after which a trap will be sent.
SES Trap Threshold
Possible Settings: **1–900, or 0 to Disable** Default Setting: **15**
Specifies the threshold for Severely Error Seconds events in a 15-minute interval after which a trap will be sent.
UAS Trap Threshold
Possible Settings: **1–900, or 0 to Disable** Default Setting: **0**
Specifies the threshold for Unavailable Seconds events in a 15-minute interval after which a trap will be sent.
LOSW Trap Threshold
Possible Settings: **1–900, or 0 to Disable** Default Setting: **0**
Specifies the threshold for Loss of Sync Word Seconds events in a 15-minute interval after which a trap will be sent.
CRC Trap Threshold
Possible Settings: **1–900, or 0 to Disable** Default Setting: **0**
Specifies the threshold for CRC events in a 15-minute interval after which a trap will be sent.
Attenuation Trap Threshold
Possible Settings: **1–127 dB, or 0 to Disable** Default Setting: **0**
Specifies the threshold for loop attenuation in a 15-minute interval after which a trap will be sent.
Margin Trap Threshold
Possible Settings: **1–15 dB, or 0 to Disable** Default Setting: **4**
Specifies the threshold for the Signal-to-Noise ratio margin in a 15-minute interval after which a trap will be sent.

Table 3: Synchronous Data Port Options – Model 7995 (1 of 2)

Port Type
Possible Settings: **E530A, V.35, RS449, X.21** Default Setting: **E530A**
Determines the port type for the data port.
Payload Rate
Possible Settings: **64 – 2304 kbps in 64k increments** Default Setting: **192 kbps**
Specifies the payload rate of the port. This option is not displayed on the unit when Adaptive Rate is enabled. The STU-C configures the payload rate for the STU-R when Adaptive Rate is disabled (Max DSL Rate = Min DSL Rate, see Table 1, DSL Interface Options).
Transmit Clock Source
Possible Settings: **Internal, External** Default Setting: **Internal**
Specifies whether the transmitted data for the synchronous data port is clocked using an internal clock provided by the DCE or an external clock provided by the DTE connected to the synchronous data port.
Invert Transmit Clock
Possible Settings: **Disable, Enable** Default Setting: **Disable**
When configured as the STU-C and Transmit Clock Source is set to External, specifies whether the clock supplied by the the unit on the TXC interchange circuit DB (ITU-T 114) is phase inverted with respect to the Transmitted Data interchange circuit BA (ITU-T 103). This configuration option is useful when an excessive cable length between the unit and the DTE causes errors.
Send All Ones on Data Port Not Ready
Possible Settings: **Both, Disable, DTR, RTS** Default Setting: **Both**
Specifies the conditions on the data port that determine when valid data is not being sent from the DTE. When this condition is detected, all ones are sent to the network.
Action on Network LOS Alarm
Possible Settings: **Halt, None** Default Setting: **Halt**
Specifies the action taken on the synchronous data port when an LOS (Loss Of Signal) alarm is received on the DSL interface.

Table 3: Synchronous Data Port Options – Model 7995 (2 of 2)

Network Initiated Data Channel Loopback
Possible Settings: **Disable, Enable** Default Setting: **Disable**
Allows the initiation and termination of a Data Channel Loopback (DCLB) by the receipt of a DCLB-actuate sequence or DCLB-release sequence from the network or far-end device.
Port (DTE) Initiated Loopbacks
Possible Settings: **Disable, DTLB, DCLB, Both** Default Setting: **Disable**
Allows the initiation and termination of a local Data Terminal Loopback (DTLB) or remote Data Channel Loopback (DCLB) by the DTE connected to this port. (DTLB is equivalent to a V.54 loop 3, and DCLB is equivalent to a V.54 loop 2.) Control of these loopbacks is through the DTE interchange circuits as specified by the V.54 standard.
Elastic Store
Possible Settings: **Disable, Enable** Default Setting: **Enable**
When configured as the STU-C and Transmit Clock Source is set to External, used to enable or disable a first-in, first-out (FIFO) buffer circuit for the incoming external clock. This circuit is used to compensate for the differences between the frequencies of the data clocks for the two units in the circuit. Do not enable Elastic Store if the attached DCE has an elastic store buffer larger than 32 bits.

Table 4: G.703 Interface Options – Model 7996 (1 of 2)

Framing
Possible Settings: **Framed, Unframed** Default Setting: **Framed**
Specifies whether G.704 framing is used for the G.703 interface.
Line Coding
Possible Settings: **AMI, HDB3** Default Setting: **HDB3**
Specifies the line coding format to be used by the G.703 interface.
Line Framing
Possible Settings: **CRC4, noCRC4** Default Setting: **noCRC4**
Specifies the framing format to be used by the G.703 interface.

Table 4: G.703 Interface Options – Model 7996 (2 of 2)

Time Slot 16
Possible Settings: **Signaling, Data** Default Setting: **Signaling**
Specifies whether the G.703 interface is used for voice or data.
Send (AIS) on Network Failure
Possible Settings: **Enable, Disable** Default Setting: **Enable**
Specifies the action taken on the signal transmitted to the G.703 when a valid signal cannot be recovered from the network interface (LOS or OOF).
Primary Clock Source
Possible Settings: **G.703, Internal** Default Setting: **Internal**
Specifies from where the unit will derive its timing.

Table 5: System Options (1 of 2)

DSL Mode
Possible Settings: **STU-C**, **STU-R** Default Setting: **STU-R**
Controls whether the unit is configured as a SHDSL Transceiver Unit – Central Site (STU-C) or a SHDSL Transceiver Unit – Remote Terminal Site (STU-R). NOTE: Changing this option will reset the unit.
Test Timeout
Possible Settings: **Enable**, **Disable** Default Setting: **Enable**
Allows tests to end automatically. The feature should be enabled when the unit is remotely managed so that control can be regained after a test is accidentally executed.
Test Duration (min)
Possible Settings: **1 – 120** Default Setting: **10**
Number of minutes for a test to be active before automatically ending.

Table 5: System Options (2 of 2)

G.703 Line Termination
(Model 7996) Possible Settings: **75 ohms, 120 ohms** Default Setting: **120 ohms**
Sets the line impedance for the unit.
Region Setting
Possible Setting: **Annex B** (read-only)
For an STU-C, specifies the set of unique, regional SHDSL operations parameters to be used by the unit. Annex B is for European networks.
Spectrum Management
Possible Settings: **Enable, Disable** Default Setting: **Disable**
For an STU-C, enabling spectrum management limits the DSL speeds on the unit to meet BT Access Network Spectrum standards.
Country Code
Possible Setting: **UK** (read-only)
For an STU-C, determines the spectrum management standard to be used (ANFP for UK) to calculate the speeds allowed on this unit which comply with spectrum management.

Table 6: Communication Port Options (1 of 3)

Port Use
Possible Settings: **Terminal**, **Net Link** Default Setting: **Terminal**
Specifies how the communications port is to be used.
Port Type
Possible Settings: **Asynchronous**, **Synchronous** Default Setting: **Asynchronous**
Determines whether the communication port will be asynchronous or synchronous when Port Use is set to Net Link.

Table 6: Communication Port Options (2 of 3)

Data Rate
Possible Settings: **9.6**, **14.4, 19.2, 28.8, 38.4, 57.6, 115.2** Default Setting: **9.6**
Specifies the communication port baud rate.
Character Length
Possible Settings: **7, 8** Default Setting: **8**
Determines the character length of the communication port.
Parity
Possible Settings: **None**, **Odd, Even** Default Setting: **None**
Specifies the parity of the communication port.
Stop Bits
Possible Settings: **1, 1.5, 2** Default Setting: **1**
Specifies the number of stop bits for the communication port.
Ignore Control Leads
Possible Settings: **Disable, DTR** Default Setting: **Disable**
Specifies whether DTR is used.
Login Required
Possible Settings: **Enable, Disable** Default Setting: **Disable**
Specifies whether an ID and password are required to access the asynchronous terminal interface on the communication port when Port Use is set to Terminal. Login IDs are created with a password and access level.
Port Access Level
Possible Settings: **Administrator**, **Operator** Default Setting: **Administrator**
Specifies the highest level of access allowed when accessing an ATI session through a Telnet session when Port Use is set to Terminal.

Table 6: Communication Port Options (3 of 3)

Inactivity Timeout
Possible Settings: **Enable, Disable** Default Setting: **Disable**
Provides automatic logoff of a Telnet session when Port Use is set to Terminal.
Disconnect Time (Minutes)
Possible Settings: **1 – 60** Default Setting: **5**
Number of minutes of inactivity before the session terminates automatically when Port Use is set to Terminal and Inactivity Timeout is enabled. Timeout is based on no keyboard activity.

Table 7: Telnet Session Options (1 of 2)

Telnet Session
Possible Settings: **Enable, Disable** Default Setting: **Enable**
Specifies if the unit will respond to a Telnet session request from a Telnet client on an interconnected IP network.
Telnet Login Required
Possible Settings: **Enable, Disable** Default Setting: **Disable**
Specifies whether a user ID and password are required to access to the ATI through a Telnet session. Login IDs are created with a password and access level.
Session Access Level
Possible Settings: **Administrator**, **Operator** Default Setting: **Administrator**
The Telnet session access level is interrelated with the access level of the Login ID.
Inactivity Timeout
Possible Settings: **Enable, Disable** Default Setting: **Disable**
Provides automatic logoff of a Telnet session.

Table 7: Telnet Session Options (2 of 2)

Disconnect Time (Minutes)
Possible Settings: **1 – 60** Default Setting: **5**
Number of minutes of user inactivity before a Telnet session terminates automatically. Time out is based on no keyboard activity.

Table 8: Communication Protocol Options

Node IP Address
Possible Settings: **001.000.000.000 – 223.255.255.255, Clear** Default Setting: **000.000.000.000**
For an STU-C, specifies the Node IP address.
Node Subnet Mask
Possible Settings: **000.000.000.000 – 255.255.255.255, Clear** Default Setting: **000.000.000.000**
For an STU-C, specifies the Node Subnet Mask.
Default Network Destination
Possible Settings: **None**, **COM, DSL** Default Setting: **None**
Specifies where the default management network is connected when Port Use is set to NetLink for the COM port.. For example, if your default network is connected to the COM port, select COM as the default management network destination.
Communication Port IP Address
Possible Settings: **001.000.000.000 – 223.255.255.255, Clear** Default Setting: **Clear (000.000.000.000)**
Specifies the Communication Port IP Address when Port Use is set to NetLink for the COM port.
Communication Port Subnet Mask
Possible Settings: **001.000.000.000 – 255.255.255.255, Clear** Default Setting: **Clear (000.000.000.000)**
Specifies the Communication Port Subnet Mask when Port Use is set to NetLink for the COM port.

Table 8: Communication Protocol Options

Communication Port Link Protocol
Possible Settings: **PPP**, **SLIP** Default Setting: **PPP**
Specifies the Communication Port link layer protocol when Port Use is set to NetLink for the COM port.

Table 9: General SNMP Management Options

SNMP Management
Possible Settings: **Enable, Disable** Default Setting: **Enable**
Enables or disables the SNMP management features.
Community Name 1
Possible Settings: ***ASCII text field*****, Public, Clear** Default Text: **Public**
Identifies the name of the community allowed to access the unit's MIB. The community name must be supplied by an external SNMP manager when that manager attempts to access an object in the MIB.
Name 1 Access
Possible Settings: **Read, Read/Write** Default Setting: **Read/Write**
Determines the access level for Community Name 1.
Community Name 2
Possible Settings: ***ASCII text field*****, Clear** Default Text: **Clear (null string)**
Identifies the name of the second community allowed to access the unit's MIB. The community name must be supplied by an external SNMP manager when that manager attempts to access an object in the MIB.
Name 2 Access
Possible Settings: **Read, Read/Write** Default Setting: **Read**
Determines the access level for Community Name 2.

Table 10: SNMP NMS Security Options

NMS IP Validation
Possible Settings: **Enable, Disable** Default Setting: **Disable**
For IP Complex systems, specifies whether security checking is performed on the IP address of SNMP management systems attempting to access the node.
NMS *n* IP Address
Possible Settings: **001.000.000.000 – 223.255.255.255, Clear** Default Setting: **000.000.000.000**
For IP Complex systems, specifies the Internet Protocol address used to identify each SNMP trap manager (limit of 10).
Access Type
Possible Settings: **Read, Read/Write** Default Setting: **Read**
For IP Complex systems, determines the access level allowed for an authorized NMS when IP address validation is being performed.

Table 11: SNMP Traps Options (1 of 2)

SNMP Traps
Possible Settings: **Enable, Disable** Default Setting: **Enable**
Controls the generation of SNMP trap messages.
NMS *n* IP Address
Possible Settings: **001.000.000.000 – 223.255.255.255, Clear** Default Setting: **000.000.000.000**
For IP Complex systems, specifies the Internet Protocol address used to identify each SNMP trap manager (limit of 5).
NMS *n* Destination
Possible Settings: **DSL, COM** Default Setting: **DSL**
For IP Complex systems, provides the network destination path of each trap manager. COM displays if Port Use is set to NetLink.

Table 11: SNMP Traps Options (2 of 2)

General Traps
Possible Settings: **Disable, Warm, AuthFail, Both** Default Setting: **Both**
Determines which SNMP traps are sent to each trap manager.
Enterprise Specific Traps
Possible Settings: **Enable, Disable** Default Setting: **Disable**
Determines if SNMP traps are generated for enterprise-specific events.
Link Traps
Possible Settings: **Disable, Up, Down, Both** Default Setting: **Both**
Determines if SNMP traps are generated for link up and link down for one of the communication interfaces.
Link Traps Interfaces
Possible Settings: *7995:* **Network, SYNC, All** *7996:* **Network, G.703, All** Default Setting: **All**
Determines if the SNMP *linkUp*, *linkDown*, and interface-related *enterpriseSpecific* traps are generated for the network interface, synchronous or G.703 port, or both.

Configuring the Unit Using the Internal Switches

You can use the internal switches to manually configure the unit.

⚠ HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES

This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

▶ Procedure

To configure the unit using internal Switchpack S3:

1. Power off the unit.
2. Remove the enclosure cover:
   - — Use a Phillips screwdriver to remove the two screws from the top of the unit.
   - — Push a flat-blade screwdriver through the slots on both sides of the housing to free the four inner latches.
3. Locate Switchpack S3 on the circuit board using Figure 1, Hotwire TDM SHDSL Endpoint Switchpack Locations.
4. Set Switch 6 on Switchpack S3 to ON to enable the switchpack.
5. Set the switches to your desired configuration:
   - — For Model 7995, refer to Table 12.
   - — For Model 7996, refer to Table 13.
6. Replace the cover and fasten it with the two screws.
7. Power on the board to reset the unit and enable the new configuration.

Switchpack Location

Use the following illustration to locate Switchpack S3.

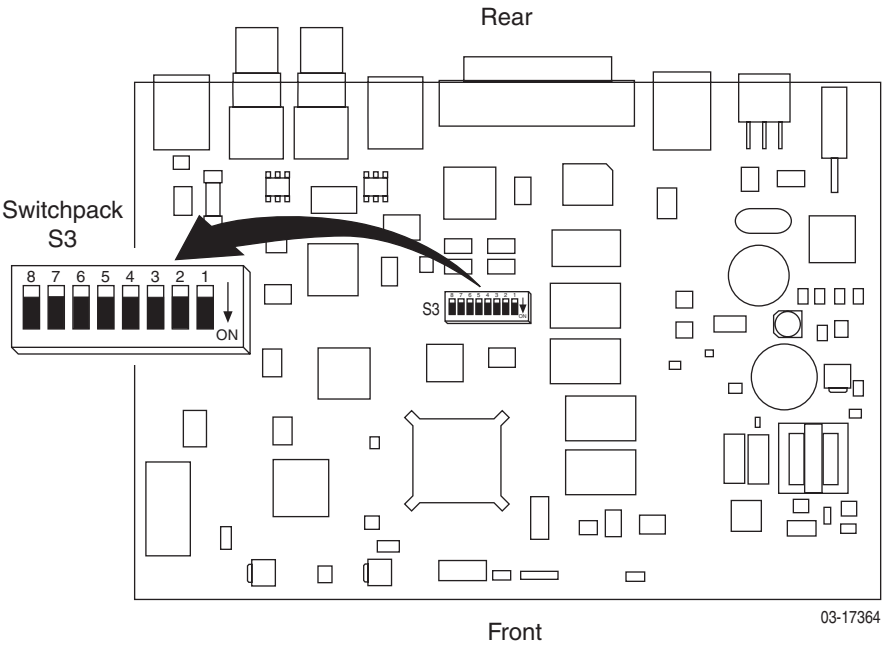


Figure 1: Hotwire TDM SHDSL Endpoint Switchpack Locations

Model 7995 Switchpack Definitions

Table 12 lists Model 7995 Switchpack definitions.

Table 12: Switchpack S3 Definitions – Model 7995

<table>
<tr><th>Switch #</th><th>Allows you to . . . Default in Bold</th></tr>
<tr><td>1</td><td>Control whether the unit is an STC-C or an STU-R
OFF = STU-R
ON = STU-C</td></tr>
<tr><td>2</td><td>Control enabling of either Fixed Rate or Auto Rate mode.
OFF = Fixed Rate Mode
ON = Auto Rate Mode</td></tr>
<tr><td>3, 4, 5</td><td>Select one of eight preset DSL line rates. If Auto Rate is enabled, DSL Line Rate represents the Auto Rate ceiling. Valid only for a unit configured as an STU-C.
<table>
<tr><th colspan="3">Switch Position</th><th>DSL Line Rate Default in Bold</th></tr>
<tr><td>5</td><td>4</td><td>3</td><td></td></tr>
<tr><td>OFF</td><td>OFF</td><td>OFF</td><td>2056 kbps</td></tr>
<tr><td>OFF</td><td>OFF</td><td>ON</td><td>200 kbps</td></tr>
<tr><td>OFF</td><td>ON</td><td>OFF</td><td>264 kbps</td></tr>
<tr><td>OFF</td><td>ON</td><td>ON</td><td>392 kbps</td></tr>
<tr><td>ON</td><td>OFF</td><td>OFF</td><td>520 kbps</td></tr>
<tr><td>ON</td><td>OFF</td><td>ON</td><td>776 kbps</td></tr>
<tr><td>ON</td><td>ON</td><td>OFF</td><td>1032 kbps</td></tr>
<tr><td>ON</td><td>ON</td><td>ON</td><td>1544 kbps</td></tr>
</table></td></tr>
<tr><td>6</td><td>Enable or disable Switchpack S3.
OFF = Switchpack Disabled
ON = Switchpack Enabled</td></tr>
<tr><td>7, 8</td><td>Control the sync port data rate. Specifies the maximum payload rate when the DSL line rate is 200 kbps. Valid only for a unit configured as an STU-C, in Fixed Rate Mode.
<table>
<tr><th colspan="2">Switch Position</th><th>Sync Data Port Rate Default in Bold</th></tr>
<tr><td>7</td><td>8</td><td></td></tr>
<tr><td>OFF</td><td>OFF</td><td>192 kbps</td></tr>
<tr><td>OFF</td><td>ON</td><td>128 kbps</td></tr>
<tr><td>ON</td><td>ON</td><td>64 kbps</td></tr>
</table></td></tr>
</table>

Model 7996 Switchpack Definitions

Table 13 lists Model 7996 Switchpack definitions.

Table 13: Switchpack S3 Definitions – Model 7996

<table>
<tr><th>Switch #</th><th>Allows you to . . . Default in Bold</th></tr>
<tr><td>1</td><td>Control whether the unit is an STU-C or an STU-R.
OFF = STU-R
ON = STU-C</td></tr>
<tr><td>2</td><td>Control enabling of either Fixed Rate or Auto Rate mode. Valid only for a unit configured as an STU-C.
OFF = Fixed Rate mode
ON = Auto Rate mode</td></tr>
<tr><td>3, 4, 5</td><td>Select one of eight preset DSL line rates. If Auto Rate is enabled, DSL Line Rate represents the AutoRate ceiling. Valid only for a unit configured as an STU-C.
<table>
<tr><td colspan="3">Switch Position</td><td>DSL Line Rate Default in Bold</td></tr>
<tr><td>5</td><td>4</td><td>3</td><td></td></tr>
<tr><td>OFF</td><td>OFF</td><td>OFF</td><td>2056 kbps</td></tr>
<tr><td>OFF</td><td>OFF</td><td>ON</td><td>200 kbps</td></tr>
<tr><td>OFF</td><td>ON</td><td>OFF</td><td>264 kbps</td></tr>
<tr><td>OFF</td><td>ON</td><td>ON</td><td>392 kbps</td></tr>
<tr><td>ON</td><td>OFF</td><td>OFF</td><td>520 kbps</td></tr>
<tr><td>ON</td><td>OFF</td><td>ON</td><td>776 kbps</td></tr>
<tr><td>ON</td><td>ON</td><td>OFF</td><td>1032 kbps</td></tr>
<tr><td>ON</td><td>ON</td><td>ON</td><td>1544 kbps</td></tr>
</table></td></tr>
<tr><td>6</td><td>Enable or disable Switchpack S3.
OFF = Switchpack Disabled
ON = Switchpack Enabled</td></tr>
<tr><td>7</td><td>Determines whether G.704 Framing is used. Applies only to an STU-C.
OFF = Framed
ON = Unframed (Applies only when DSL line rate is 2056 kbps.)</td></tr>
<tr><td>8</td><td>Determines whether Channel 16 contains signaling information (voice mode) or data. Applies only to an STU-C configured for G.704 framing.
OFF = Channel 16 used for signaling
ON = Channel 16 used for data</td></tr>
</table>

⚠ Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. Input power to this product must be provided by one of the following: (1) a UL Listed/CSA Certified power source with a Class 2 or Limited Power Source (LPS) output for use in North America; or (2) a 24 or –48 VDC National Electric Code (NEC) ANSI/NFPA 70/Canadian Electric Code (CEC) Class 2 circuit installed in accordance with articles 110-16, 110-17, and 110-18 of the NEC, and articles 2-308, 2-310, 2-312, 2-314, 2-200, and 2-202 of the CEC, or (3) a Safety Extra Low Voltage (SELV) power source with a maximum available output of less than 240 VA, certified for use in the country of installation.
3. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
4. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
5. Do not attempt to install or service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all installation and servicing to qualified service personnel.
6. General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
7. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
8. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
9. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:
   - — Never install telephone wiring during a lightning storm.
   - — Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
   - — Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
   - — Use caution when installing or modifying telephone lines.
   - — Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
   - — Do not use the telephone to report a gas leak in the vicinity of the leak.

CE Marking

When the product is marked with the CE mark on the equipment label, a supporting Declaration of Conformity may be downloaded from the Zhone website at **www.zhone.com**.

Contacting Global Service and Support

Contact Global Service and Support (GSS) if you have any questions about this or other Zhone products. Before contacting GSS, make sure you have the following information:

- Zhone product you are using
- System configuration
- Software version running on the system
- Description of the issue

Technical Support

If you require assistance with the installation or operation of your product, or if you want to return a product for repair under warranty, contact GSS. The contact information is as follows:

E-mail	support@zhone.com
Telephone (North America)	877-ZHONE20
Telephone (International)	510-777-7133
Internet	www.zhone.com/support

If you purchased the product from an authorized dealer, distributor, Value Added Reseller (VAR), or third party, contact that supplier for technical assistance and warranty support.

Service Requirements

If the product malfunctions, all repairs must be performed by the manufacturer or a Zhone-authorized agent. It is the responsibility of users requiring service to report the need for service to GSS.

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7990-A2-ZN10-30